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## Modification of electrostatic charge on inhaled carrier lactose particles by addition of fine particles.

Bennett FS, Carter PA, Rowley G, Dandiker Y.

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Triboelectrification affects particle adhesion and agglomeration and hence the formulation, manufacture, and use of dry powder inhaler (DPI) devices. Electrostatic charge measurement of two component mixes of spray-dried or crystalline lactose fine particles (< 10 microns) 0, 5, 10, 15, 20, and 30% w/w with spray-dried or crystalline lactose 63-90 microns, respectively, has been undertaken using a system incorporating pneumatic transport of the mixed powders to a stainless steel cyclone charging device. The magnitude of charge on the mixes was shown to decrease with increased fine particle content, and there was no significant difference in charge for each concentration between spray-dried and crystalline lactose. Both the variation of charge and powder adhesion to the cyclone surface increased with increasing in fine particle content. The proportion of fine particles in carrier systems in DPIs may thus have an important role where triboelectrification is involved.

PMID: 10028425 [PubMed - indexed for MEDLINE]

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## Prolonged effect of tiotropium bromide on methacholine-induced bronchoconstriction in asthma.

PubMed Services

O'Connor BJ, Towse LJ, Barnes PJ.

Clinical Studies Unit, Royal Brompton National Heart and Lung Hospital, London, United Kingdom.

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Inhaled anticholinergic drugs are effective in the treatment of chronic obstructive pulmonary diseases (COPD), of acute asthma, and of some patients with nocturnal asthma. Tiotropium bromide (tiotropium) is a novel anticholinergic agent with a long duration of action and kinetic selectivity for M1- and M3-subtypes of muscarinic receptors. We investigated the duration of protection of a single dose of inhaled tiotropium against methacholine-induced bronchoconstriction in 12 male atopic asthmatic volunteers in a double-blind, placebo-controlled study. On four separate occasions 8 to 24 d apart, methacholine PC<sub>20</sub> was measured serially for up to 48 h after placebo and after three doses of tiotropium (10, 40, and 80 microg). Each dose of tiotropium produced mild bronchodilatation as measured by an increase in FEV<sub>1</sub> of between 5.5 and 11.1% from baseline, that was sustained for 24 h. There was significant dose-dependent protection against methacholine challenge at 2 h of 5.0 +/- 1.1, 7.1 +/- 0.5, and 7.9 +/- 0.7 (mean +/- SEM) doubling doses after 10, 40, and 80 microg respectively, and this persisted for 48 h. There were no adverse effects reported at any dose. The prolonged bronchodilator response and protection against methacholine challenge suggest that tiotropium may be useful in the treatment of COPD and nocturnal asthma and that once-daily dosing may be sufficient.

### Publication Types:

- Clinical Trial
- Randomized Controlled Trial

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